Application Serial No. 10/697587
Office Action dated March 23, 2005
Examiner: K.M. Picardat
Art Unit: 2822

IN THE CLAIMS

Amendments To The Claims:

This Listing of Claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for forming quantum dots, comprising the steps of:

(a) depositing a metal thin layer [[2]] onto a substrate [[1]];

(b) coating a dielectric precursor [[3]] onto the metal thin layer [[2]]; and

(c) heating the resultant substrate [[1]], on which ~~the~~ said metal thin layer [[2]] and ~~the~~ said dielectric precursor [[3]] were sequentially stacked, in a furnace in which the temperature is stepwisely elevated to a maximum of 200 to 500[[□]]°C.

2. (Currently Amended) A method for forming quantum dots, comprising the steps of:

(a) mixing a dielectric precursor diluted in a solvent and a metal powder, and stirring the mixture;

(b) coating the dielectric precursor solution in which ~~the~~ said metal powder was dissolved, onto a substrate; and

(c) heating the resultant substrate with the temperature being stepwisely elevated to a maximum of 200 to 500[[□]]°C.

3. (Currently Amended) The method for forming quantum dots according to claim 1, wherein the metal of ~~the~~ said metal thin layer ~~or the said metal powder~~ is at least one selected from the group

consisting of copper, zinc, tin, cobalt, iron, cadmium, lead, magnesium, barium, molybdenum, indium, nickel, tungsten, bismuth, silver, manganese and alloys thereof.

4. (Currently Amended) The method for forming quantum dots according to claim 1, wherein ~~the~~ said dielectric precursor is an acidic precursor capable of dissolving ~~the~~ said metal.

5. (Currently Amended) The method for forming quantum dots according to claim 4, wherein ~~the~~ said acidic precursor includes those containing carboxyl groups (-COOH).

6. (Currently Amended) The method for forming quantum dots according to claim 1, further comprising the step of subjecting the resultant substrate [[1]] on which the metal thin layer [[2]] and the dielectric precursor [[3]] were sequentially stacked, to a first intermediate heating at 80-150[[□]]°C, prior to step (c).

7. (Currently Amended) The method for forming quantum dots according to claim 1, further comprising the step of depositing a solution in which the dielectric precursor [[3]] is dissolved in a solvent, onto the substrate [[1]] and subjecting the resultant substrate [[1]] to a second intermediate heating at 80-150[[□]]°C, prior to step (a).

8. (Previously Presented) The method for forming quantum dots according to claim 2, wherein the said solvent is at least one selected from N-methylpyrrolidone (NMP), water, N-dimethylacetamide and diglyme.

9. (Original) The method for forming quantum dots according to claim 2, further comprising the additional step of stirring the mixture so that the metal powder is sufficiently reacted with the dielectric precursor after step (a).

10. (Currently Amended) The method for forming quantum dots according to claim 2, further comprising the step of subjecting the resultant substrate onto which the dielectric precursor solution in which the metal powder has been dissolved was coated, to a first intermediate heating at 80-150[[□]]°C, prior to step (c).

11. (Currently Amended) The method for forming quantum dots according to claim 2, further comprising the step of depositing a solution in which the dielectric precursor [[3]] is dissolved in a solvent, onto the substrate and subjecting the resultant substrate to a second intermediate heating at 80-150[[□]]°C, prior to step (a).

12. (Original) The method for forming quantum dots according to claim 11, wherein the solvent is at least one selected from N-methylpyrrolidone (NMP), water, N-dimethylacetamide and diglyme.

13. (Original) The method for forming quantum dots according to claim 2, wherein the coating of the solution of the dielectric precursor in which the metal powder is dissolved, onto the substrate is carried out by one technique selected from spin coating, jetting, spraying, printing, brushing, casting, blade coating, dispensing and molding.

14. (Original) The method for forming quantum dots according to claim 2, wherein the control of the size, density and distribution of quantum dots is carried out by adjusting the amount of the metal powder in the mixing step (a) and/or controlling the heating conditions in the heating step (c).

15. (Currently Amended) A polymer thin film in which the ~~metal oxide~~ quantum dots formed by the method according to claim 1 are metal oxide quantum dots and are dispersed.

16. (Original) An electronic device including the polymer thin film according to claim 15 in which metal oxide quantum dots are dispersed.

17. (Currently Amended) The method for forming quantum dots according to claim 2, wherein the metal of ~~the said metal thin layer or the~~ said metal powder is at least one selected from the group consisting of copper, zinc, tin, cobalt, iron cadmium, lead, magnesium, barium, molybdenum, indium, nickel, tungsten, bismuth, silver, manganese, and alloys thereof.

18. (Currently Amended) The method for forming quantum dots according to claim 2, wherein ~~the~~ said dielectric precursor is an acidic precursor capable of dissolving ~~the~~ said metal.

19. (Currently Amended) A polymer thin film in which the ~~metal oxide~~ quantum dots formed by the method according to claim 2 are metal oxide quantum dots and are dispersed.

20. (New) A polymer thin film according to claim 15, wherein the metal oxide quantum dots may be dispersed with uniform size and distribution.

21. (New) An electronic device according to claim 16, wherein the polymer thin film includes metal oxide quantum dots that may be dispersed with uniform size and distribution.

22. (New) A polymer thin film according to claim 19, wherein the metal oxide quantum dots may be dispersed with uniform size and distribution.